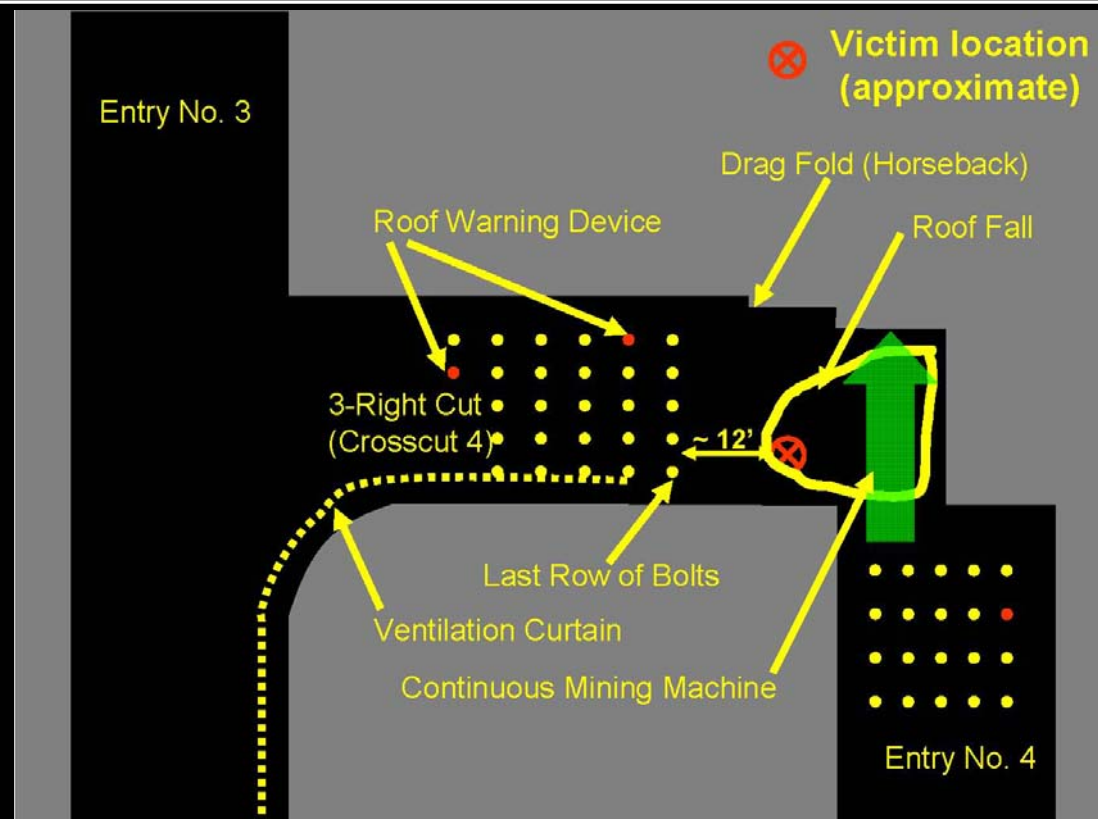


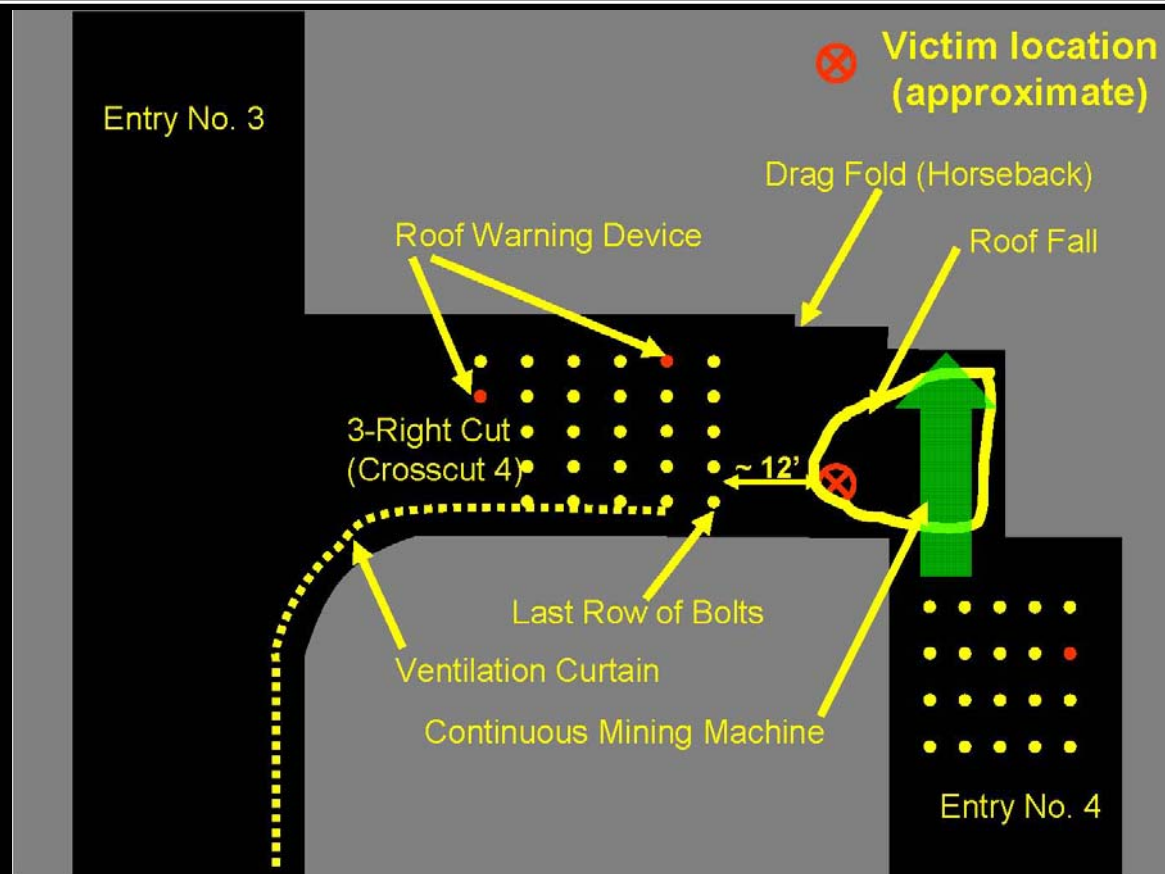
*This presentation is for illustrative and **general** educational purposes only and is not intended to substitute for the official MSHA Investigation Report analysis nor is it intended to provide the sole foundation, if any, for any related enforcement actions.*

ACCIDENT DESCRIPTION



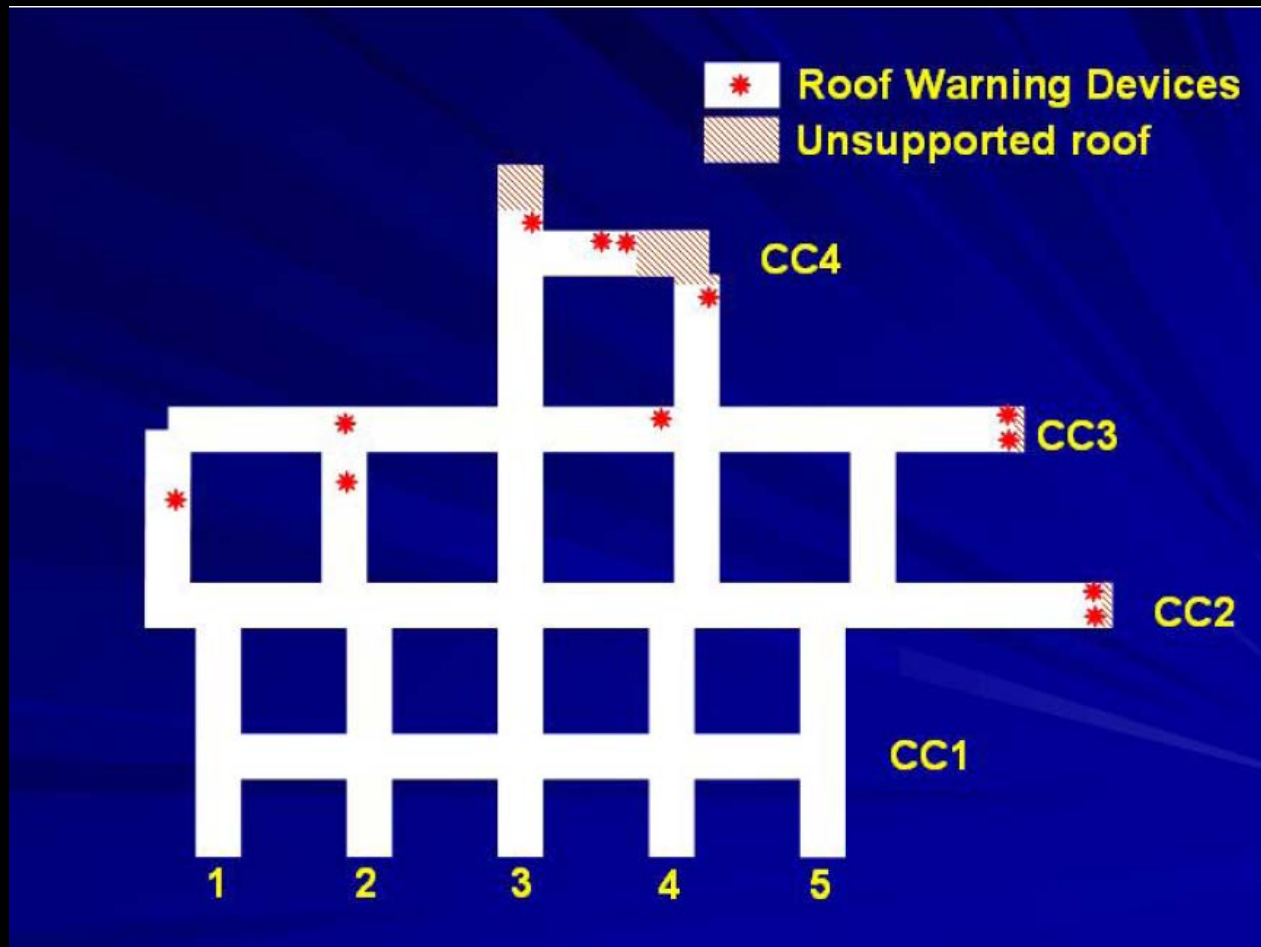
On Monday, June 6, 2005, second shift miners entered the mine and performed normal mining activities. While mining entry No. 3, a geologic fault and drag fold were encountered that produced excessive amounts of water from the roof and floor. This water flowed outby and into the 3-Right working place, accumulating in the unbolted area mined during the previous cut. The bolting crew entered the 3-Right working place and installed three rows of bolts. They did not bolt the remainder of the cut because water had accumulated near the face. This left an unsupported area approximately 16 feet long and 21 feet wide.

ACCIDENT DESCRIPTION



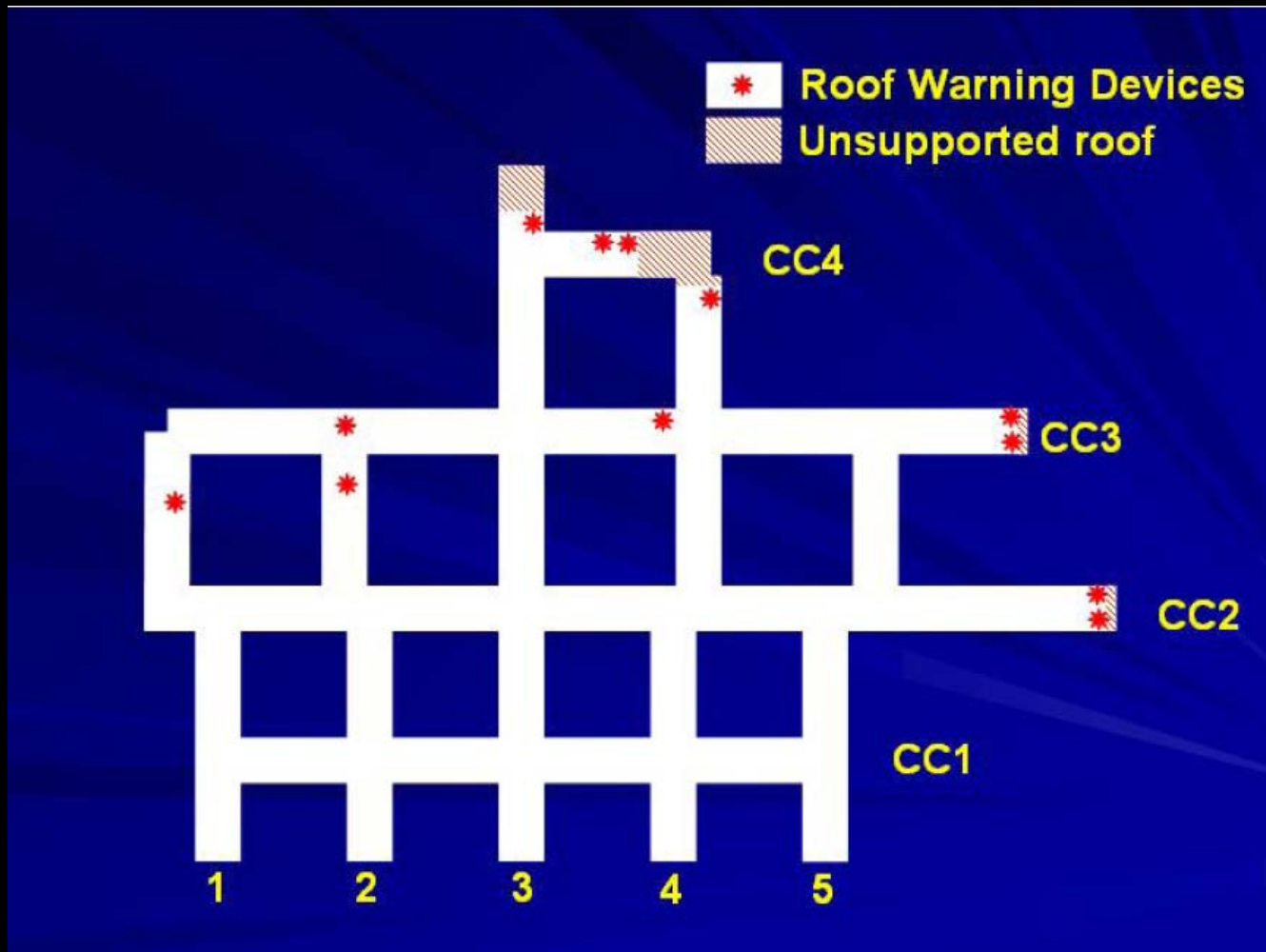
While entry No. 4 was mined, the victim, who was an electrician, performed duties as helper on the continuous mining machine. When the working face of entry No. 4 was cut into the unbolted area of the 3-Right cut, water flowed from the face. The victim left the area, traveled outby around the pillar block and into the unbolted portion of 3-Right. At that time, the left lift of the No. 4 entry was completed. As the continuous mining machine was backed out of the cut, portions of the immediate roof fell, which covered and fatally injured the victim.

ACCIDENT DESCRIPTION



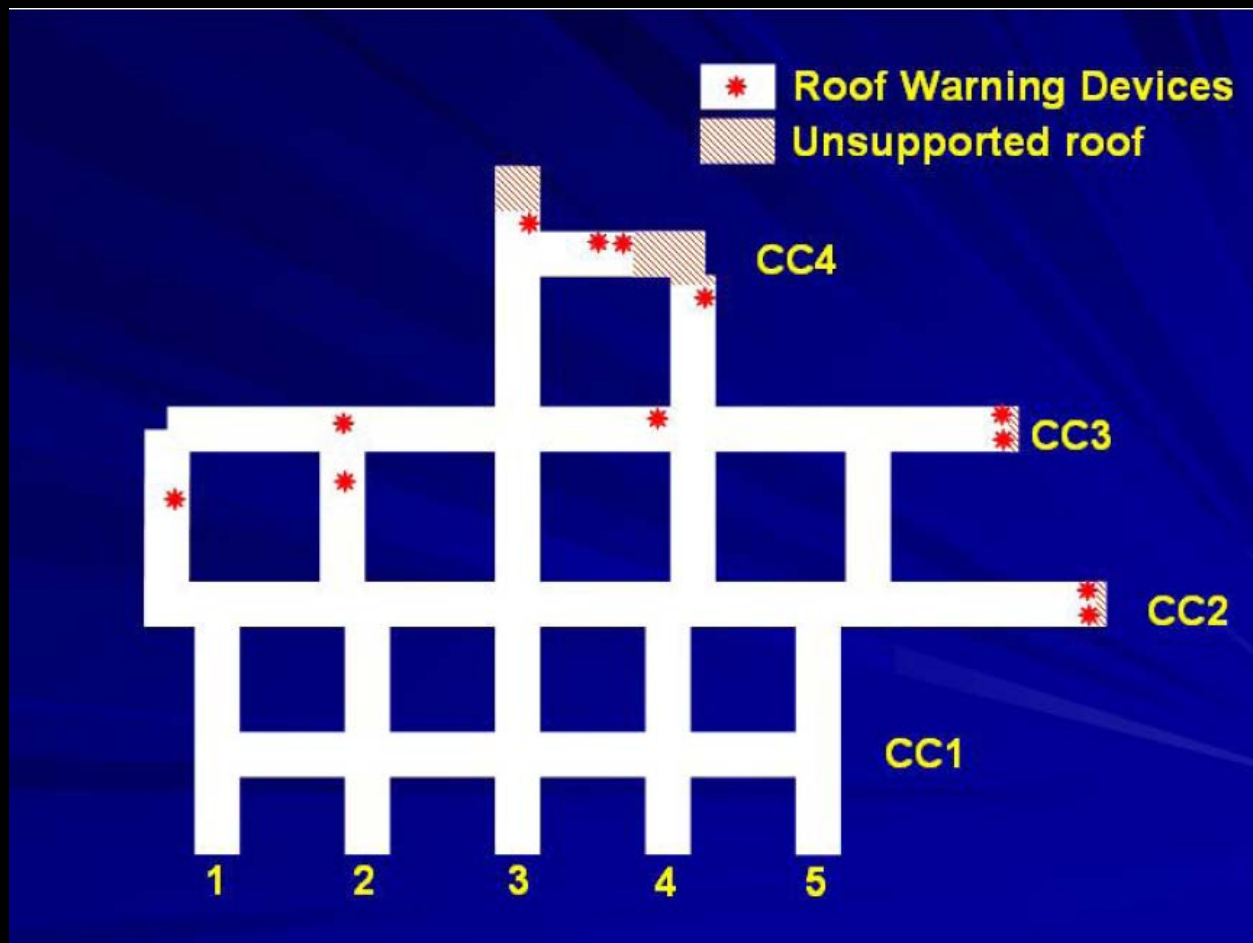
A reflective warning device was installed on the next to last row of roof bolts on the left side of the entry in the 3-Right accident area. At the time of the accident, a ventilation curtain was hung from the roof near the right rib in 3-Right, which provided blowing ventilation for the mining and roof bolting operations in the crosscut.

ACCIDENT DESCRIPTION



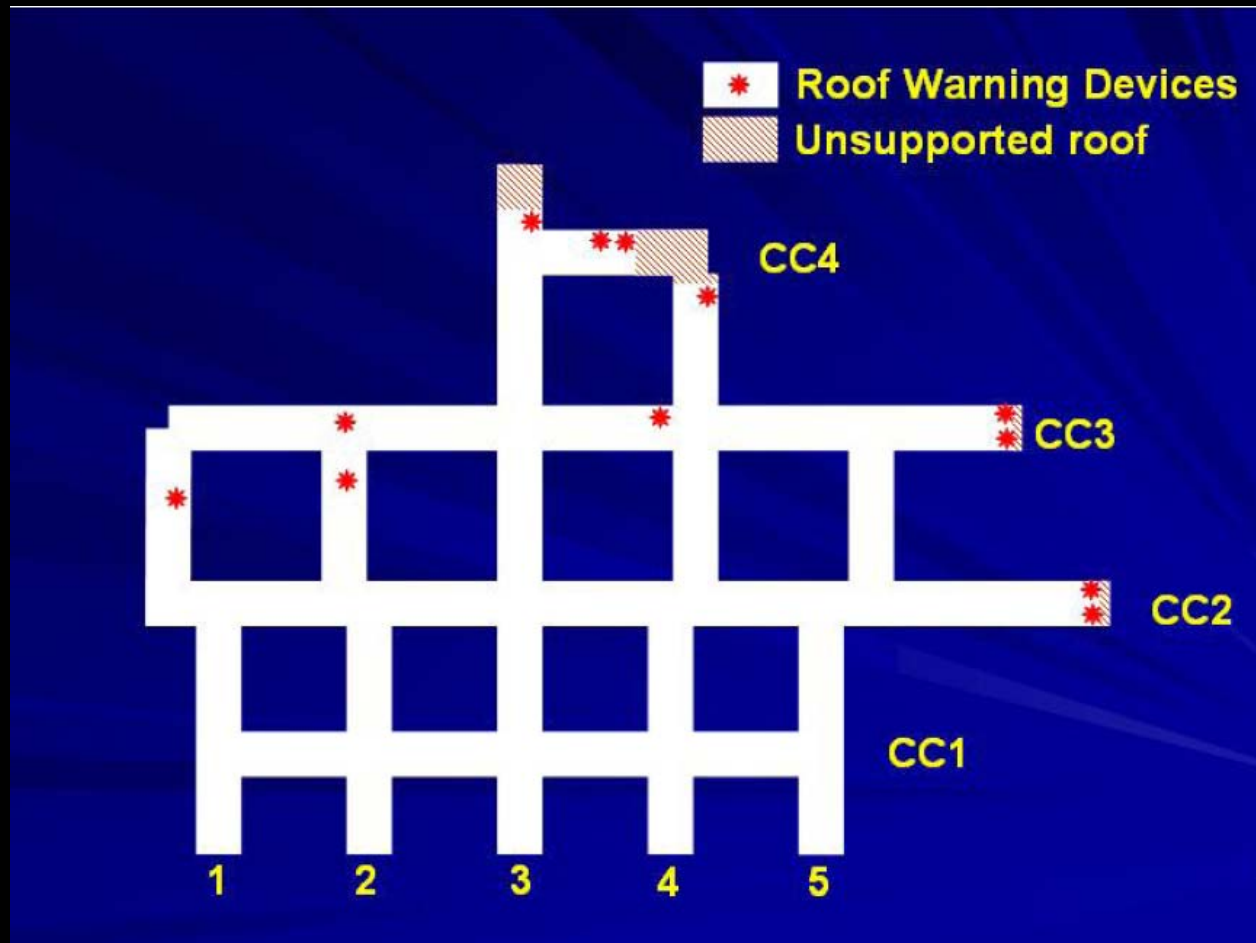
Although the investigation could not determine the victim's route of travel, he may have walked between the curtain and the rib when he entered 3-Right. Thus, the curtain would have obstructed his view of the reflective warning device located on the left side of the crosscut.

ACCIDENT DESCRIPTION



Also, in 3-Right just outby the accident area, a second roof warning device was installed on the left side of the place, five rows outby the last row of permanent roof supports. This placed two roof warning devices in the same crosscut with the second one approximately 16 feet outby the one on the next to last row of bolts.

ACCIDENT DESCRIPTION



The section had four other roof warning devices hanging in areas that were not near the last row of permanent roof supports. These extra warning devices defeated the intent of the warning system, potentially caused confusion, and promoted complacency as to the proper location of the end of permanent roof supports.

ROOT CAUSE ANALYSIS

Causal Factor: The victim traveled in by permanent roof supports, which exposed him to an area of unsupported roof in 3-Right cut (located in crosscut No. 4, between entry Nos. 3 and 4) and to the fall of roof that caused the fatal accident. A number of potential factors may have contributed to the victim traveling beyond permanent supports, including:

- a) The air current from the breakthrough was coursing through 3-Right cut, and would have placed the victim in the dust and water mist from the mining operation, which could have substantially reduced the victim's visibility and may have caused him not to see the reflective roof warning device.
- b) The victim may not have been aware that the roof in 3-Right cut was unbolted, and he may have walked into the unsupported area unknowingly and without checking the roof as he entered. He was most likely looking at the floor and the accumulation of water on the floor because of discussions with the shuttle car operators.

ROOT CAUSE ANALYSIS

c) Depending on his route of travel into 3-Right, which could not be determined during the investigation, he may have walked between the ventilation curtain and the right rib. Thus, the curtain would have prevented the victim from seeing the reflective warning device that was hanging from the roof on the left side of the crosscut.

d) An extra roof warning device was located outby in 3-Right at the accident site, which, depending on his route of travel, may have confused him as to the proper location of the end of permanent roof supports or caused complacency as to the use of these warning devices.

Corrective Action: The mine operator should develop procedures and means to ensure that persons do not work or travel beyond permanent roof supports. These should include removal of roof warning devices when places are completely bolted; installation of roof warning devices on both sides of the entry to ensure that one is readily visible from behind ventilation curtains; ensure that when breakthroughs are made that employees do not travel in the immediate area downwind from the breakthrough; and routinely observe work habits of miners to ensure that miners do not travel or work beyond the last row of permanent roof supports. Management should stress to all employees the critical importance of this safety standard.

ROOT CAUSE ANALYSIS

Causal Factor: An area of roof approximately 16 feet long and 21 feet wide was left unsupported in the 3-Right cut. The working face of entry No. 4 mined into this unsupported area causing the fatal fall of roof to occur. The following potential factors may have contributed to the breakthrough into the unsupported area:

- a) The roof bolter operators were unable to completely install all of the roof bolts in 3-Right cut due to an accumulation of water on the right (down-dip) side of the crosscut, which left the area of unsupported roof where the fatal accident occurred.
- b) Prior to mining in entry No. 4, the continuous mining machine operator spoke with the roof bolter operators and understood them to say that the face of entry No. 3 was not completely roof bolted. Based on this discussion, the continuous mining machine operator thought that 3-Right cut was supported. The roof bolter operators thought they told the continuous mining machine operator that they had left 3 or 4 rows of roof bolts out of the face of 3-Right cut, and that the face of No. 3 entry was not completely bolted. This miscommunication contributed to the breakthrough of entry No. 4 into the unsupported area of 3-Right cut.

ROOT CAUSE ANALYSIS

c) The section foreman did not return to 3-Right cut prior to the breakthrough to determine that the cut had been supported as required.

Corrective Action: The mine operator should develop procedures and means to assure that a working face is not mined through into an unsupported area of active workings. These should include: requiring a visual examination to confirm that the area to be mined into is supported prior to breakthrough; training employees on the use of "repeat backs" during critical conversations such that the listener repeats back the information and it is confirmed by the speaker (training should include the theory behind effective communications and the ways that using repeat backs can improve performance); and developing a system to address unusual conditions in unbolted places, so that unsupported areas can be roof bolted on cycle.

ENFORCEMENT ACTIONS

A 104(d)(1) citation was issued for a violation of 75.203(d). The No. 4 working face was mined into the unsupported working place of 3-Right.

A 104(a) citation was issued for a violation of 75.202(b). The victim traveled approximately 12 feet inby supported roof in 3-Right and was struck and fatally injured by falling roof material that measured approximately 8 feet long, 4.5 feet wide, and 4 to 19 inches thick.

A 104(a) citation was issued for a violation of 75.362. The 3-Right cut area was examined by the section foreman at 8:36 p.m., prior to the accident, and the foreman recorded a hazardous condition that "3R" was "not bolted." Due to the hazardous condition noted and the accumulation of water at the "3R" (cut No. 3, 3-Right) face, an additional examination for safety purposes should have been made to check for correction of the hazardous conditions prior to the breakthrough into the unsupported area. This additional examination was not made.

ENFORCEMENT ACTIONS Cont'd.

A 104(a) citation was issued for a violation of 75.208. The end of permanent roof support in 3-Right was not posted with a warning device which was readily visible when approaching the end of support on the right side of the entry from behind the ventilation line curtain. A warning device was posted on the left side of the entry on the next to last row of roof bolts, but this device was not readily visible from behind the ventilation curtain. In addition, a second warning device was installed on the left side of the place, five rows outby the last row of permanent roof supports. Other areas on the 1st South section, as listed below, contained warning devices where the roof was permanently supported (roof bolted):

- a. Entry No. 1, between crosscut Nos. 2 and 3.
- b. Entry No. 2, between crosscut Nos. 2 and 3.
- c. The intersection of entry no. 2 and crosscut No. 3.
- d. Crosscut No. 3, between entry Nos. 3 and 4.

These devices were not removed after the places were permanently supported with roof bolts. Failure to remove these devices defeats the intent of the regulation, promotes complacency, and provides a false impression as to where the end of permanent roof support is located; thereby not accurately warning miners where unsupported roof exists.

BEST PRACTICES

- Always stand or work under supported roof, and do not travel inby the last row of permanent roof supports.
- Monitor the work cycle routinely to ensure that the provisions of the approved roof control plan are understood and followed by all miners.
- Conduct a thorough visual examination of the roof, face, and ribs and ensure permanent supports are installed prior to performing work or mining through into unsupported areas.
- Be alert for and recognize visible warning devices or physical barriers located at the end of permanent roof support.
- Conduct a risk assessment, identify all possible hazards and ensure you are positioned in a safe area.
- Never mine a working face into an unsupported area or intersection.